REMARKS

I. Interview Summary

Applicant acknowledges with appreciation the time and cooperation extended by the Examiner in conducting a telephonic interview with Applicant's representative on November 10, 2009. During the interview, the issues raised in the Final Office Action mailed April 13, 2009, were discussed. Although proposed claim amendments were discussed, an agreement with respect to the claims was not reached. The substance of the interview is included in the remarks below.

II. Status of the Claims

The Office Action mailed November 18, 2009, rejected claims 1-7, 10-18, 21, 22, and 24-45 under 35 U.S.C. § 103(a) as being unpatentable over *Bosley et al.* (U.S. Patent No. 7,054,867) in view of *Zenchelsky et al.* (U.S. Patent No. 6,233,686), and further in view of *Bommareddy et al.* (U.S. Patent No. 6,880,089).

By this Amendment, Applicant amends claims 1, 3, 6, 10, 16, 27, 28, 30, 31, 38, and 45, and cancels claims 2, 13-15, 18, 34-36, and 41-43. Claims 1, 3-7, 10-12, 16, 17, 21, 22, 24-33, 37-40, 44, and 45 remain pending.

In an attempt to advance prosecution, Applicant herein amends the claims as proposed by the Examiner in the Interview Summary mailed on November 18, 2009. The Examiner has indicated that "such amendment will overcome the cited prior art and would result [in] an allowance." *Interview Summary*, p. 4. For example, Applicant amends claim 10 to incorporate recitations of dependent claims 14 and 15. Applicant also amends claim 1 to recite, what was previously inherent in the original claim words, "that the second processing unit [is] different than the first processing unit." The

Examiner's proposed amendment to "clarify that multidimensional address space is determined based on hash function and division modulo" has not been made at least because the recitation of a "multidimensional address space" is not found in the present claims.

III. Rejection of claims 1-7, 10-18, 21, 22, and 24-45 under 35 U.S.C. § 103(a)

Applicant respectfully traverses the rejection of claims 1-7, 10-18, 21, 22, and 24-45 under 35 U.S.C. § 103(a). A *prima facie* case of obviousness has not been established at least because the differences between the prior art and Applicant's claims are such that it would not have been obvious for one of ordinary skill in the art at the time of the invention to modify the prior art to arrive at Applicant's claimed invention.

In order to establish a rejection under 35 U.S.C. § 103(a), the claimed invention must be considered as whole. M.P.E.P. § 2141.02. However, in rejecting claim 10, the Office Action improperly dissects the claim recitations into disjointed and incoherent pieces. *Office Action*, pp. 3-5.

As a whole, the claimed invention as recited, for example, in amended claim 10, is directed to a method for addressing packets associated with a plurality of processing units, each processing unit being associated with one of a plurality of firewall nodes in a firewall cluster within a single network. As discussed in the Reply to Office Action filed on September 11, 2009, one function of a firewall node is to direct traffic (e.g., data packets) from a first network to a second network. In the process of directing traffic, a first firewall node may translate or modify the address of the source address and source port of an incoming packet to the source address of the firewall cluster and source port of the first firewall node. *Specification*, ¶ 035. In some instances, the modified address

created by the first firewall node may conflict with a modified address created by a second firewall node. *Id.* The claimed invention as recited in claim 10 prevents address conflicts by, among other things:

> determining, by the first processing unit, whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier value assigned to the first processing unit, wherein the N-tuple space assigned to each of the plurality of processing units is different, and wherein the quadrant identifier is determined using a hash function;
>
> sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit;
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> determining, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other plurality of processing units; and
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> sending the packet based on the modified N-tuple address.

At a minimum, *Bosley et al.* fails to teach or suggest the above claim recitations.

On the contrary, *Bosley et al.* discloses a distributed routing and indexing framework for a network. *Bosley et al.*, 1:14-16 and 4:15-17. As disclosed by *Bosley et al.*, individual servers or computers (i.e., nodes) within the network are assigned a unique node ID that describes the location of a node. *Id.* at 6:31-34 and 6:45-48. To have the network be collision resistant, *Bosley et al.* discloses that the unique node IDs are generated using a 160-bit hash key. *Id.* at 6:31-44. According to *Bosley et al.*, a 160-bit hash value "represents a binary number large enough to represent over a trillion trillion trillion possible values." *Id.* at 7:31-33. For this reason, "only a very small

percent of the possible values that can be defined by such a large binary value will actually have a node associated with them." *Id.* at 7:34-39.

As is evident from the above, *Bosley et al.* discloses the use of an extremely large address space to prevent collision in a routing and indexing network. Accordingly, *Bosley et al.* does not teach or suggest "determining, by the first processing unit, whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier value assigned to the first processing unit, wherein the N-tuple space assigned to each of the plurality of processing units is different, and wherein the quadrant identifier is determined using a hash function," "sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit," "determining, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other plurality of processing units," and "sending the packet based on the modified N-tuple address," as recited in amended claim 10.

Zenchelsky et al. and *Bommareddy et al.* fail to cure the above deficiencies of *Bosley et al.* For example, *Zenchelsky et al.* discloses a method for restricting, using a firewall or filter, a system's access to a network by using access rules for the system. *Zenchelsky et al.*, 5:17-25. As disclosed by *Zenchelsky et al.*, the local rules may be stored on the filter and associated with the corresponding system by executing a hash function on the network address of the system. *Id.* at 7:24-34. *Zenchelsky et al.* further

discloses that the result of the executed hash function is used to index the system with its local rules. *Id.* at 7:35-42. Nowhere does *Zenchelsky et al.* teach or suggest "determining, by the first processing unit, whether the N-tuple address of the received packet is within an N-tuple space assigned to the first processing unit based on a quadrant identifier value assigned to the first processing unit, wherein the N-tuple space assigned to each of the plurality of processing units is different, and wherein the quadrant identifier is determined using a hash function," "sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit," "determining, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other plurality of processing units," and "sending the packet based on the modified N-tuple address," as recited in amended claim 10.

Bommareddy et al. discloses the use of "firewalls [to] perform filtering operations and/or network address translation (NAT) services." *Bommareddy et al.*, 6:57-60. However, as disclosed by *Bommareddy et al.*, NAT is simply used "to modify each packet, changing the destination address from its IP address to the actual address of the server that is to receive the traffic" and "to modify the 'From' address in each packet to create the appearance that the PC load balancer sent the packets." *Id.* at 2:38-44. *Bommareddy et al.* does not disclose the claimed method of preventing address conflicts. Specifcally, *Bommareddy et al.* does not teach or suggest "determining, by the first processing unit, whether the N-tuple address of the received packet is within an

N-tuple space assigned to the first processing unit based on a quadrant identifier value assigned to the first processing unit, wherein the N-tuple space assigned to each of the plurality of processing units is different, and wherein the quadrant identifier is determined using a hash function," "sending the packet with the N-tuple address, when it is determined that the N-tuple address is within the N-tuple space assigned to the first processing unit," "determining, when the N-tuple address of the received packet is not within the N-tuple space assigned to the first processing unit, a modified N-tuple address based on the N-tuple space assigned to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other plurality of processing units," and "sending the packet based on the modified N-tuple address," as recited in amended claim 10.

Amended independent claim 1, recites a method for addressing packets in a firewall cluster within a single network to prevent conflicts by, among other things:

> modifying, by the first processing unit, as a function of a n-tuple space for representing addresses processed by a set of processing units, a first address for the first packet into a second address for the first packet, the second address being within a range of addresses assigned only to the first firewall node;
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> selecting, from the firewall cluster within the single network, a second firewall node for processing a second packet;
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> receiving, at a second processing unit associated with the second firewall node, the second packet, the second processing unit being different than the first processing unit;
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> modifying, by the second processing unit, as a function of a n-tuple space for representing addresses processed by a set of processing units, a first address for the second packet into a second address for the second packet, the second address being within a range of addresses assigned only to the second firewall node, such that the

> second address of the second packet does not conflict with the second address of the first packet.

Bosley et al., *Zenchelsky et al.*, and *Bommareddy et al.*, taken alone or in any proper combination, fail to teach or suggest the above claim recitations, nor does the Office Action attempt to rely on *Bosley et al.*, *Zenchelsky et al.*, and *Bommareddy et al.* for such a teaching.

Independent claim 24 recites a method for addressing packets in a firewall cluster within a single network to prevent conflicts by, among other things:

> determining a quadrant identifier based on the read N-tuple address, a hash function, and modulo division;
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> determining whether the read N-tuple address corresponds to the first processing unit based on the quadrant identifier;
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> sending the packet with the N-tuple address, when the quadrant identifier corresponds to the first processing unit; and
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> determining, when the quadrant identifier does not correspond to the first processing unit, a modified N-tuple address that corresponds to the first processing unit, such that the modified N-tuple address does not conflict with addresses assigned by any of the other processing units; and
>
> sending the packet based on the modified N-tuple address.

Bosley et al., *Zenchelsky et al.*, and *Bommareddy et al.*, taken alone or in any proper combination, fail to teach or suggest the above claim recitations, nor does the Office Action attempt to rely on *Bosley et al.*, *Zenchelsky et al.*, and *Bommareddy et al.* for such a teaching.

For at least the above reasons, the Office Action has neither properly determined the scope and content of the prior art nor properly ascertained the differences between

the prior art and independent claims 1, 10, and 24. Accordingly, the Office Action has not clearly articulated a reason as to why amended independent claims 1, 10, and 24 would have been obvious to one of ordinary skill in view of the prior art. Therefore, a *prima facie* case of obviousness has not been established for independent claims 1, 10, and 24. Applicant thereby respectfully requests that the rejection of claims 1, 10, and 24 be withdrawn and the claim allowed.

Independent claims 27-31, 37, 38, 44, and 45, while of different scope than independent claims 1, 10, and 24, distinguish over *Bosley et al.*, *Zenchelsky et al.*, and *Bommareddy et al.* for at least similar reasons as those noted above for claims 1, 10, and 24. Accordingly, Applicant also respectfully requests the withdrawal of the rejection of independent claims 27-31, 37, 38, 44, and 45 under 35 U.S.C. § 103(a) and the timely allowance of the claims.

Claims 3-7, 11, 12, 16, 17, 21, 22, 25, 26, 32, 33, 39, and 40 depend from independent claims 1, 10, 24, 31, and 38 and therefore patentably distinguish from *Bosley et al.*, *Zenchelsky et al.* and *Bommareddy et al.* for at least the reasons discussed above. Accordingly, Applicant also respectfully requests withdrawal of the rejection of dependent claims 3-7, 11, 12, 16, 17, 21, 22, 25, 26, 32, 33, 39, and 40 under 35 U.S.C. § 103(a) and the timely allowance of the claims.

The preceding remarks are based on the arguments presented in the Office Action, and therefore do not address patentable aspects of the invention that were not addressed in the Office Action. The pending claims may include other elements that are not shown, taught, or suggested by the cited art. Accordingly, the preceding remarks in favor of patentability are advanced without prejudice to other bases of

patentability. Furthermore, the Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether any such statement is identified herein, Applicant declines to automatically subscribe to any statement or characterization in the Office Action.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account 06-0916.

Respectfully submitted,

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